REMARKS/ARGUMENTS

Claims 8-19 are pending in this application. By this amendment, Applicant amends Claims 16 and 17.

Claims 16 and 17 were objected to for containing minor informalities. Applicant has amended Claims 16 and 17 to correct the minor informalities noted by the Examiner. Accordingly, Applicant respectfully requests reconsideration and withdrawal of this objection.

Claims 8 and 10-19 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Shibata et al. (U.S. 2002/0145361). Claims 8-19 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Strauss (U.S. 6,667,763) in view of Shibata et al. Applicant respectfully traverses the rejections of Claims 8-19.

Claim 8 recites:

> A balanced-type surface acoustic wave filter with a balanced-to-unbalanced conversion function including an unbalanced signal terminal and first and second balanced signal terminals, the balanced-type surface acoustic filter comprising:
>
> a piezoelectric substrate;
>
> a first longitudinally coupled resonator-type surface acoustic wave filter portion having first to third IDTs disposed along a propagation direction of a surface wave on the piezoelectric substrate, a middle second IDT of the first to third IDTs being connected to the unbalanced signal terminal; and
>
> a second longitudinally coupled resonator-type surface acoustic wave filter portion having fourth to sixth IDTs disposed along the propagation direction of the surface wave on the piezoelectric substrate, the fourth IDT connected to the first IDT, and the fifth IDT connected to the first and second balanced signal terminals; wherein
>
> an electric signal passing through a signal line connecting the first IDT and the fourth IDT is about 180 degrees different in phase from an electric signal passing through a signal line connecting the third IDT and the sixth IDT; and
>
> **in the first longitudinally coupled resonator-type surface acoustic wave filter portion, in at least one of the portion where the first and second IDTs are adjacent to each other and the portion where the second and third IDTs are adjacent to each other, in at**

least one of the adjacent IDTs, weighting is provided on a plurality of electrode fingers including an outermost electrode finger which is the closest to the adjacent IDT. (emphasis added)

With the unique combination and arrangement of features recited in Applicant's Claim 8, including the feature of "in the first longitudinally coupled resonator-type surface acoustic wave filter portion, in at least one of the portion where the first and second IDTs are adjacent to each other and the portion where the second and third IDTs are adjacent to each other, in at least one of the adjacent IDTs, weighting is provided on a plurality of electrode fingers including an outermost electrode finger which is the closest to the adjacent IDT," Applicant has been able to provide a balanced-type surface acoustic wave filter in which the generation of a spike-like ripple is effectively prevented in the amplitude balancing characteristics and phase balancing characteristics in the passband, and accordingly, the balancing is improved. (see, for example, paragraph [0014] of the Substitute Specification).

The Examiner alleged that Fig. 21 of Shibata et al. teaches all of the features recited in Claim 8, except for the feature of "in the first longitudinally coupled resonator-type surface acoustic wave filter portion, in at least one of the portion where the first and second IDTs are adjacent to each other and the portion where the second and third IDTs are adjacent to each other, in at least one of the adjacent IDTs, weighting is provided on a plurality of electrode fingers including an outermost electrode finger which is the closest to the adjacent IDT." The Examiner further alleged that Fig. 33 of Shibata et al. teaches this feature. Thus, the Examiner concluded that it would have been obvious to have modified the SAW filter of Shibata et al. (Fig. 21) such that weighting would be provided in the areas between the first and second or the second and third IDTs of the first SAW filter portion of the upper track, because "such an obvious modification would have provided better amplitude and phase balance between lines 1501 and 1502 [in Fig. 21 of Shibata et al.] as suggested by Shibata et al. (see section [0028])."

The Examiner further alleged that Strauss teaches all of the features recited in Applicant's Claim 8, except for the feature of "in the first longitudinally coupled resonator-type surface acoustic wave filter portion, in at least one of the portion where the first and second IDTs are adjacent to each other and the portion where the second and third IDTs are adjacent to each other, in at least one of the adjacent IDTs, weighting is provided on a plurality of electrode fingers including an outermost electrode finger which is the closest to the adjacent IDT." As noted above, the Examiner alleged that Shibata et al. (Fig. 33) teaches this feature. Thus, the Examiner concluded that it would have been obvious to have modified the SAW filter of Strauss by having provided it with weighting as taught by Shibata et al., because "such an obvious modification would have provided the benefit of improved amplitude and phase balance in the SAW filter."

Applicant respectfully disagrees.

In the dual-mode SAW filter having two stages and two filter elements recited in Applicant's Claim 8, a spike-like ripple can be suppressed by weighting the unbalanced side element. The spike-like ripple occurs as a result of the electric signal passing through a signal line connecting the first IDT and the fourth IDT being about 180 degrees different in phase from an electric signal passing through a signal line connecting the third IDT and the sixth IDT. The spike-like ripple does not occur when the electric signal passing through a signal line connecting the first IDT and the fourth IDT is in phase with an electric signal passing through a signal line connecting the third IDT and the sixth IDT.

Shibata et al. discloses various SAW filters including weighting, where the weighting is provided to improve the amplitude balance and/or the phase balance of the various SAW filters.

In the SAW filter shown in Fig. 21 of Shibata et al., similar to the SAW filter shown in prior art Fig. 10 of the present application, the **second** longitudinally coupled resonator-type surface acoustic wave filter portion is provided with weighting in order to improve the amplitude balance and the phase balance of the filter. The dual-mode

SAW filter shown in Fig. 3 of Strauss merely includes first and second longitudinally-coupled-resonator-type SAW filter, neither of which includes any weighting.

As disclosed in paragraph [0250] of Shibata et al., the SAW filter shown in Fig. 33 of Shibata et al. includes a first longitudinally-coupled-resonator-type SAW filter 1918 (located in the upper left portion of Fig. 33), a second longitudinally-coupled-resonator-type SAW filter 1920, and an extra longitudinally-couple-resonator-type SAW filter 1918 (located below the first and second SAW filters 1918 and 1920 as shown in Fig. 33 of Shibata et al.) which is cascade-connected to each of the first and second SAW filters 1918 and 1920. As explicitly disclosed in paragraph [0250] of Shibata et al., "Withdrawal weighting is applied to the SAW filter 120 by providing a dummy electrode 1901b." In other words, similar to Fig. 21, the **second** longitudinally-coupled-resonator-type SAW filter 1920 is provided with the weighting, **NOT** the first longitudinally-coupled-resonator-type SAW filter 1918.

Neither Fig. 33 nor any other portion of Shibata et al. teaches or suggests a first longitudinally coupled-resonator-type SAW filter that is provided with weighting. Instead, similar to prior art Fig. 10 of the present application, the weighting in Shibata et al. is always provided in the second longitudinally-coupled-resonator-type SAW filter. Thus, Shibata et al. certainly fails to teach or suggest the feature of "in the first longitudinally coupled resonator-type surface acoustic wave filter portion, in at least one of the portion where the first and second IDTs are adjacent to each other and the portion where the second and third IDTs are adjacent to each other, in at least one of the adjacent IDTs, weighting is provided on a plurality of electrode fingers including an outermost electrode finger which is the closest to the adjacent IDT" as recited in Applicant's Claim 8.

In addition, since, as disclosed in Shibata et al. and the Background of the Invention of the present application, the amplitude balance and the phase balance is improved by withdrawal weighting the second longitudinally-coupled-resonator-type SAW filter and Shibata et al. fails to recognize the problem of the spike-like ripple that

occurs as a result of the electric signal passing through a signal line connecting the first IDT and the fourth IDT being about 180 degrees different in phase from an electric signal passing through a signal line connecting the third IDT and the sixth IDT, there would have been absolutely no reason whatsoever to modify any of the SAW filters of Shibata et al. or Strauss so as to include weighting in the first longitudinally-coupled-resonator-type SAW filter.

Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejection of Claim 8 under 35 U.S.C. § 103(a) as being unpatentable over Shibata et al. and the rejection of Claim 8 under 35 U.S.C. § 103(a) as being unpatentable over Strauss in view of Shibata et al.

In view of the foregoing amendments and remarks, Applicant respectfully submits that Claim 8 is allowable. Claims 9-19 depend upon Claim 8, and are therefore allowable for at least the reasons that Claim 8 is allowable.

In view of the foregoing amendments and remarks, Applicant respectfully submits that this application is in condition for allowance. Favorable consideration and prompt allowance are solicited.

The Commissioner is authorized to charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 50-1353.

Respectfully submitted,

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